

FIG. 1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

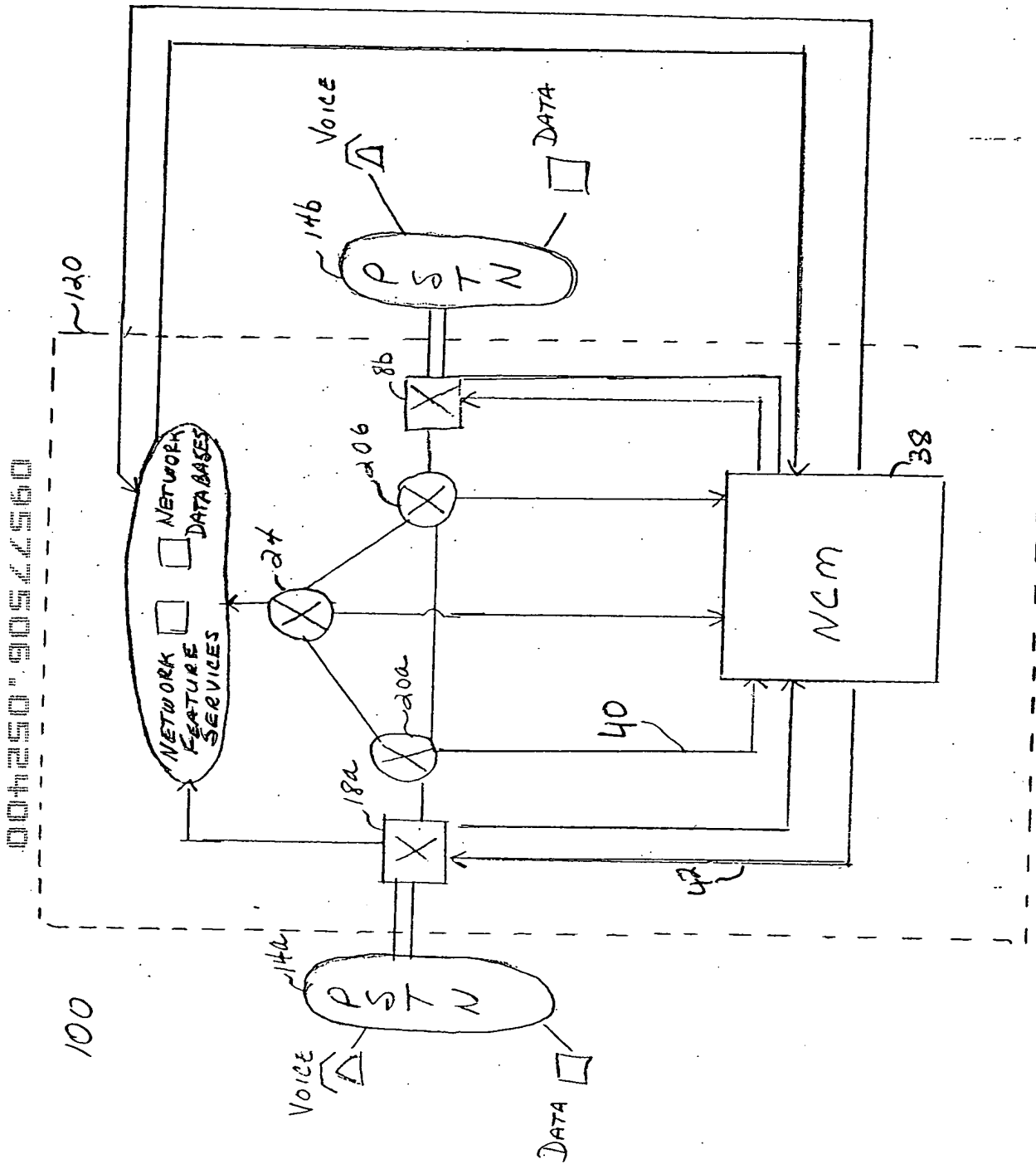


Fig. 2

Reconfiguration of Bandwidth Pipes (ATM)

$$N_i = \text{Size of VTG}_i \text{ in terms of DS}_0 \text{ channels}$$
 λ_i = Call arrival rate at VTG_{*i*}

b_i = Fraction of blocked calls experienced at VTG_{*i*}

$(1/\mu)$ = Average holding time per call

T = Allowed blocking threshold

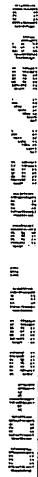


FIG. 3A

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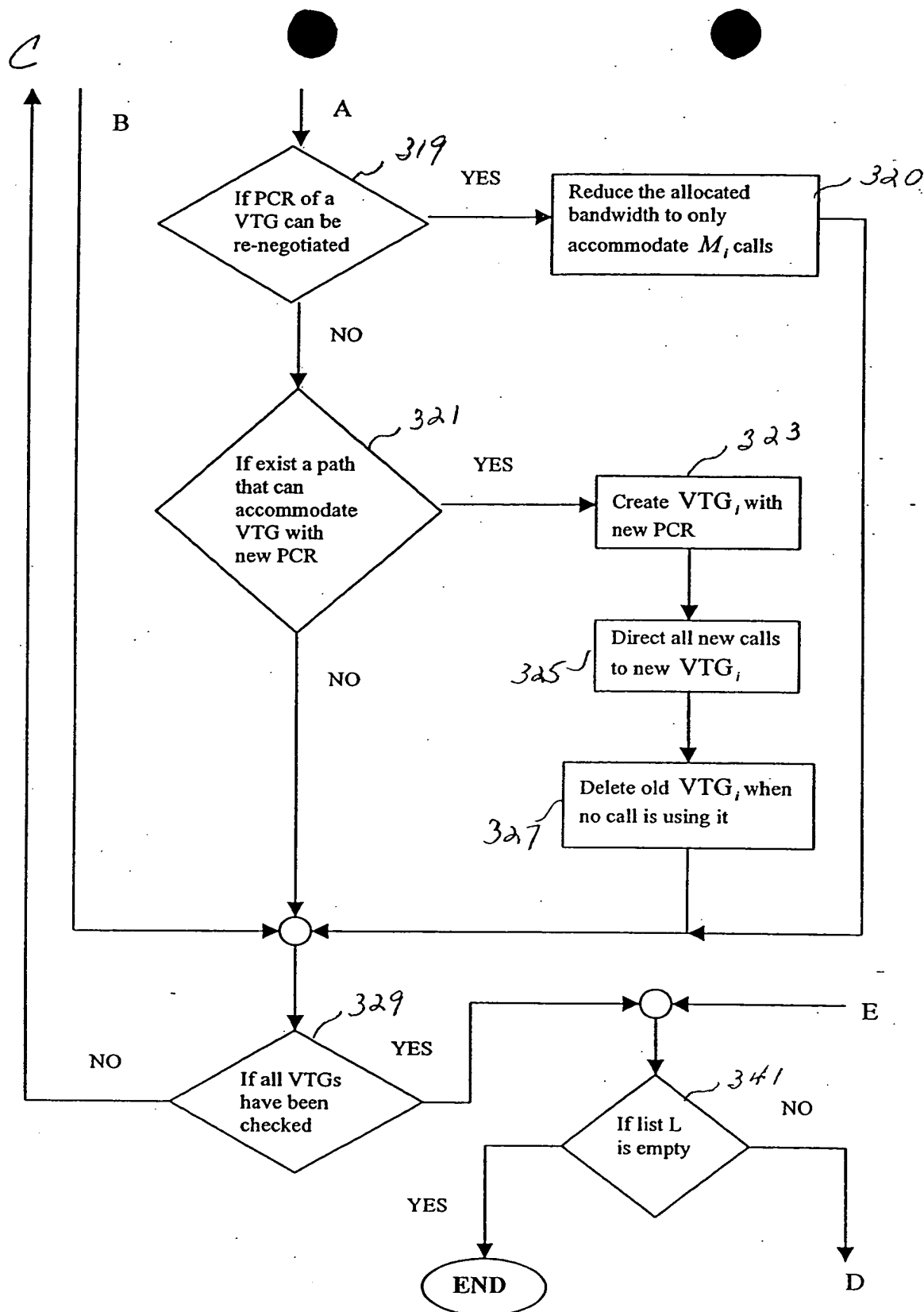


FIG. 3B

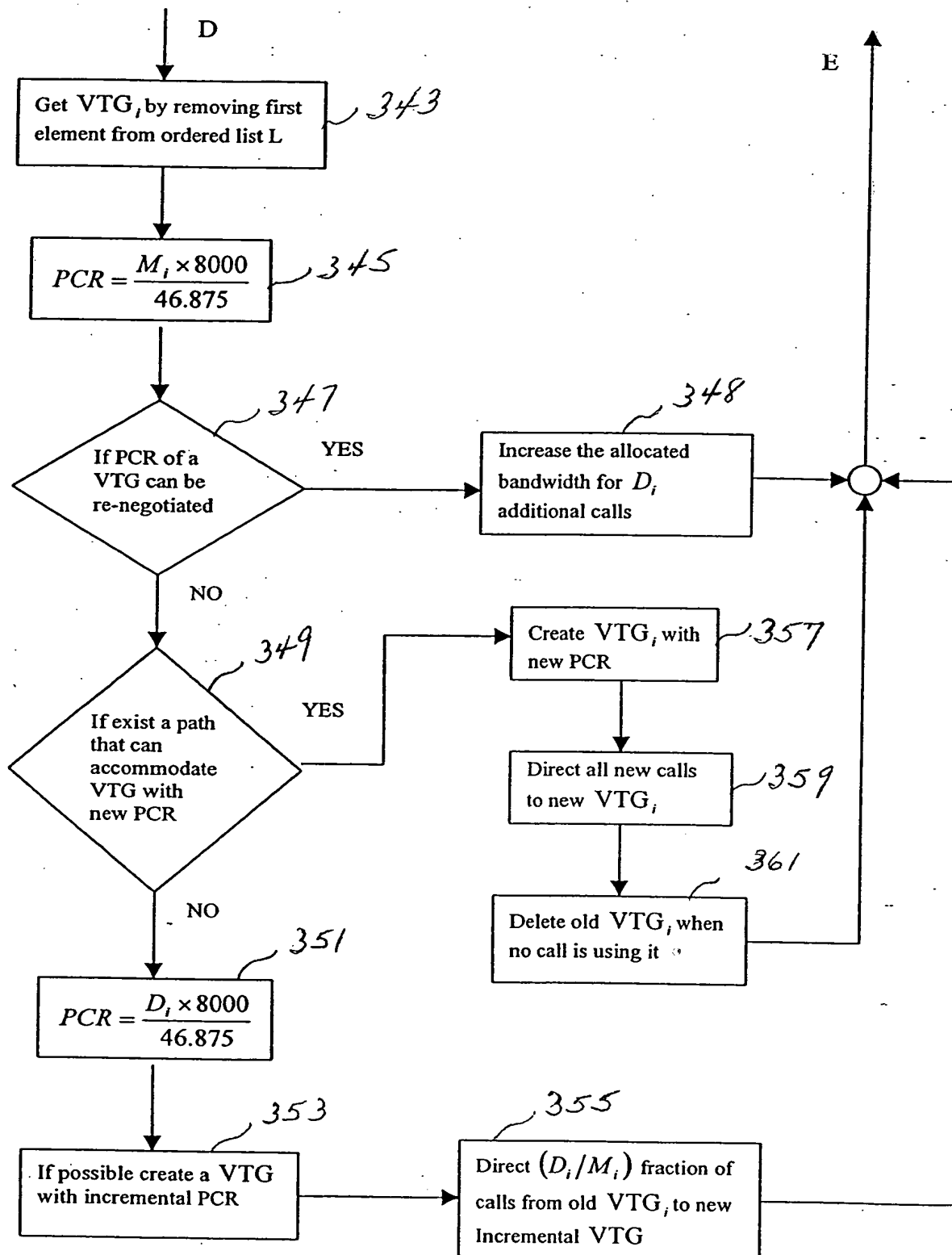


FIG. 3C

Re-routing/Call Gapping of calls in PSTN Domain (ATM)

N_i = Size of VTG_i in terms of DS₀ channels

λ_i = Call arrival rate at VTG_i

b_i = Fraction of blocked calls experienced at VTG_i

$(1/\mu)$ = Average holding time per call

B_i = Fraction of blocked calls experienced at VTG_i

T = Allowed blocking threshold

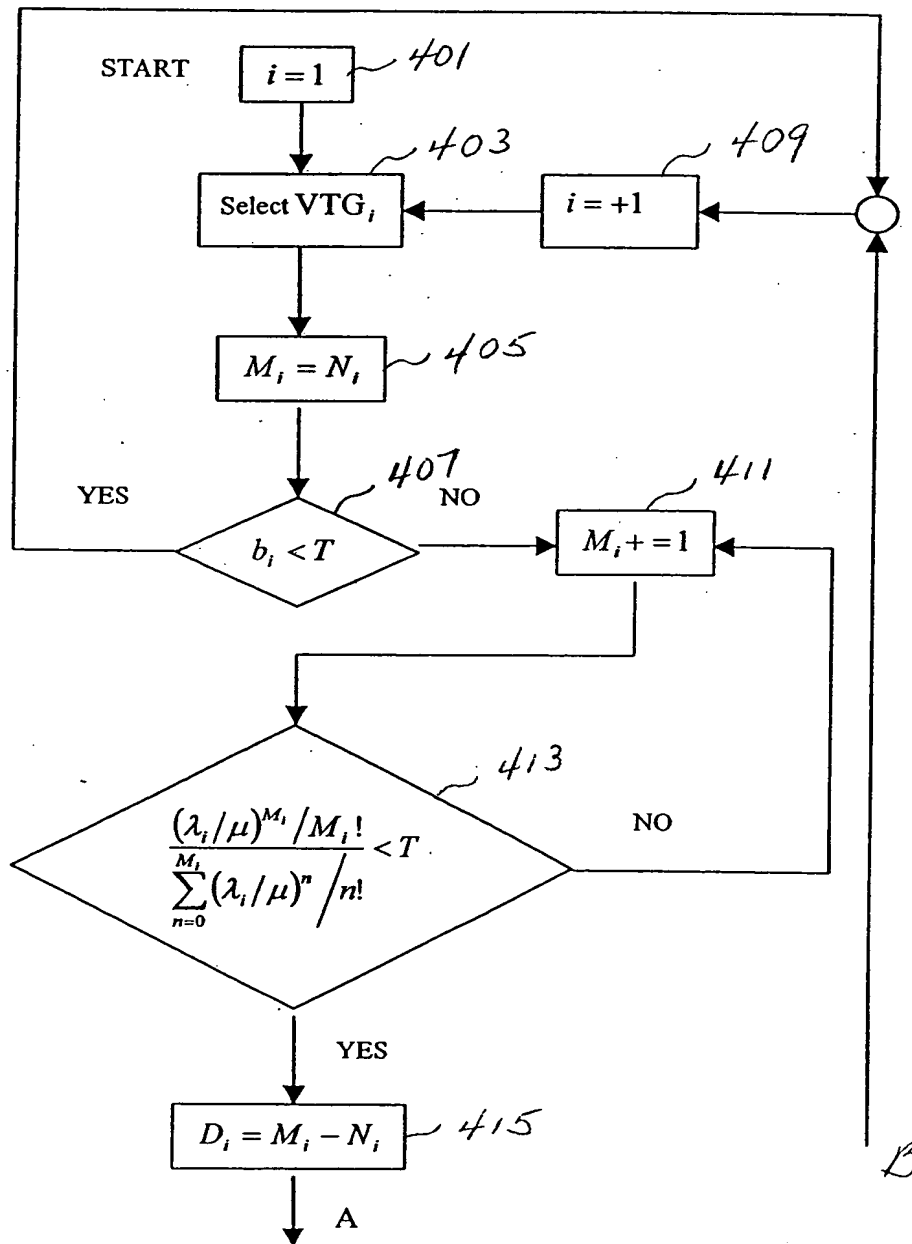


FIG. 4A

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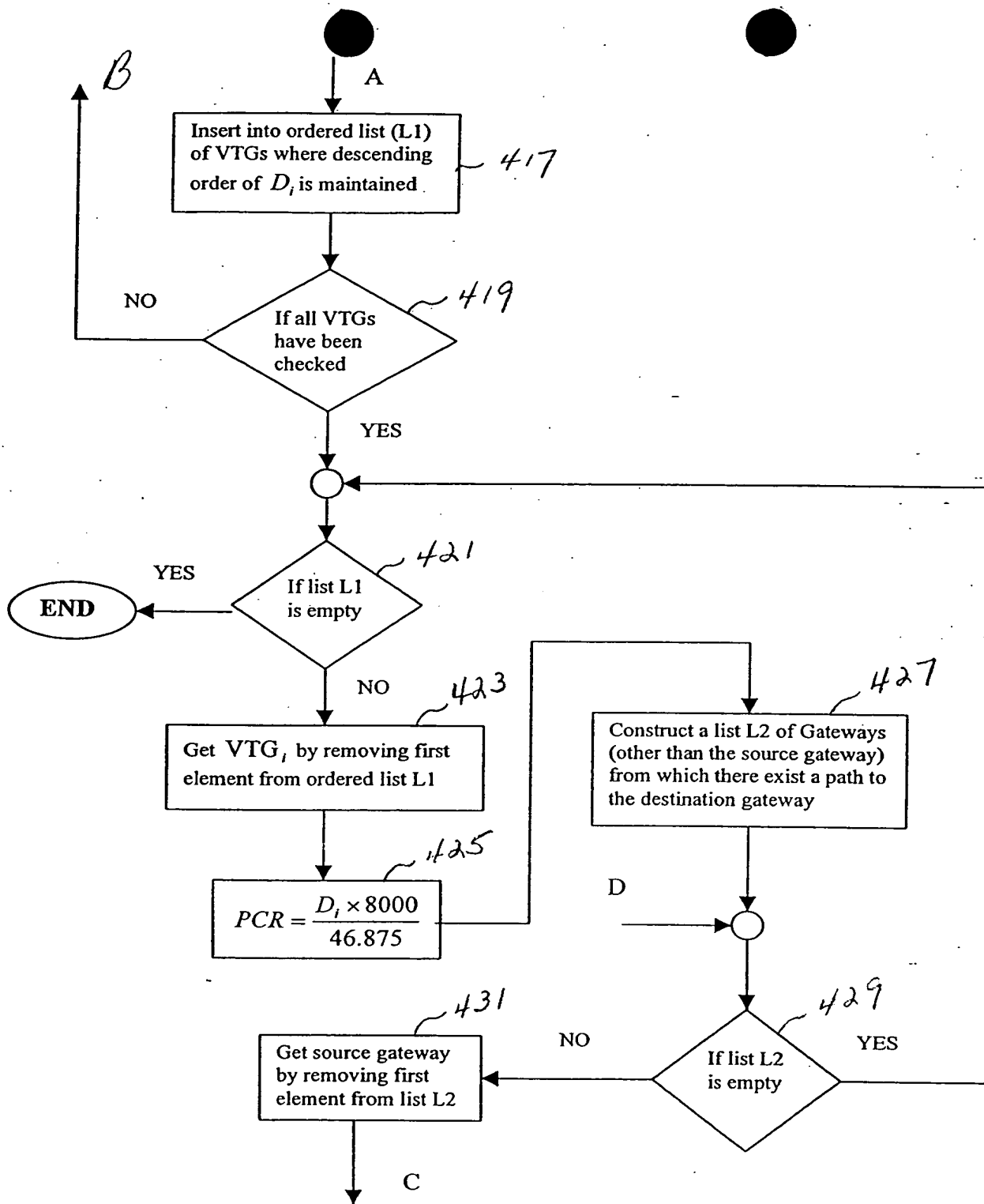


FIG. 4B

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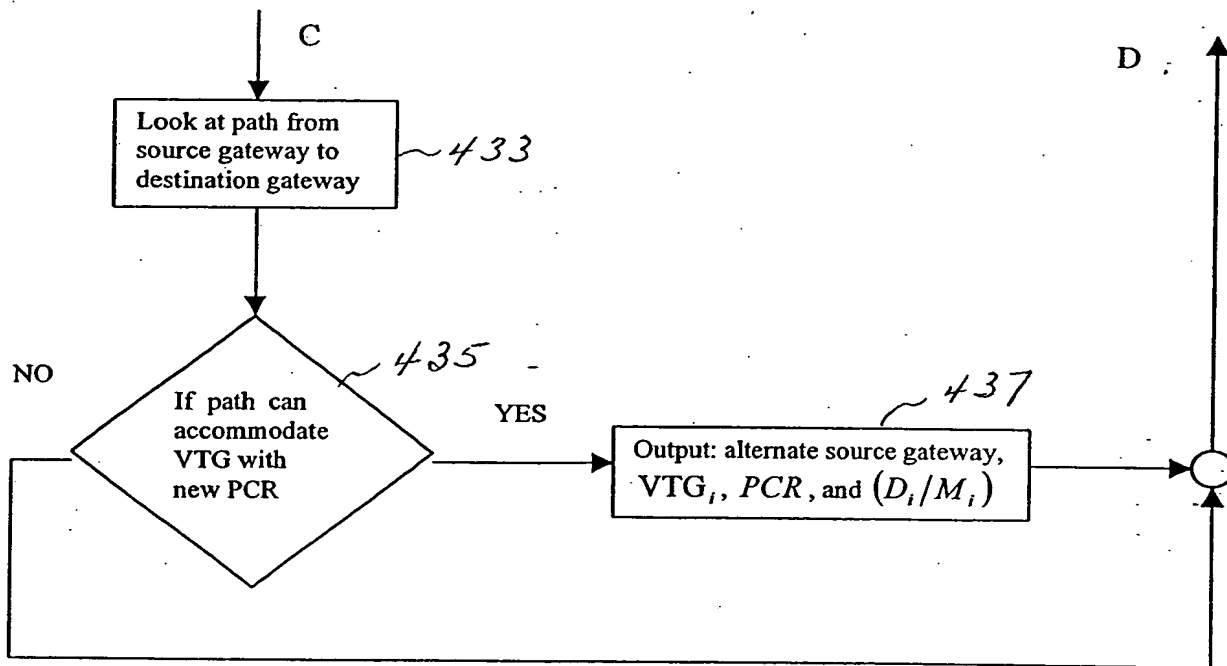


FIG. 4C

Voice Compression (ATM)

N_i = Size of VTG_i in terms of DS₀ channels

λ_i = Call arrival rate at VTG_i

b_i = Fraction of blocked calls experienced at VTG_i

CCR_i = current compression rate allocated to VTG_i

$(1/\mu)$ = Average holding time per call

T = Allowed blocking threshold

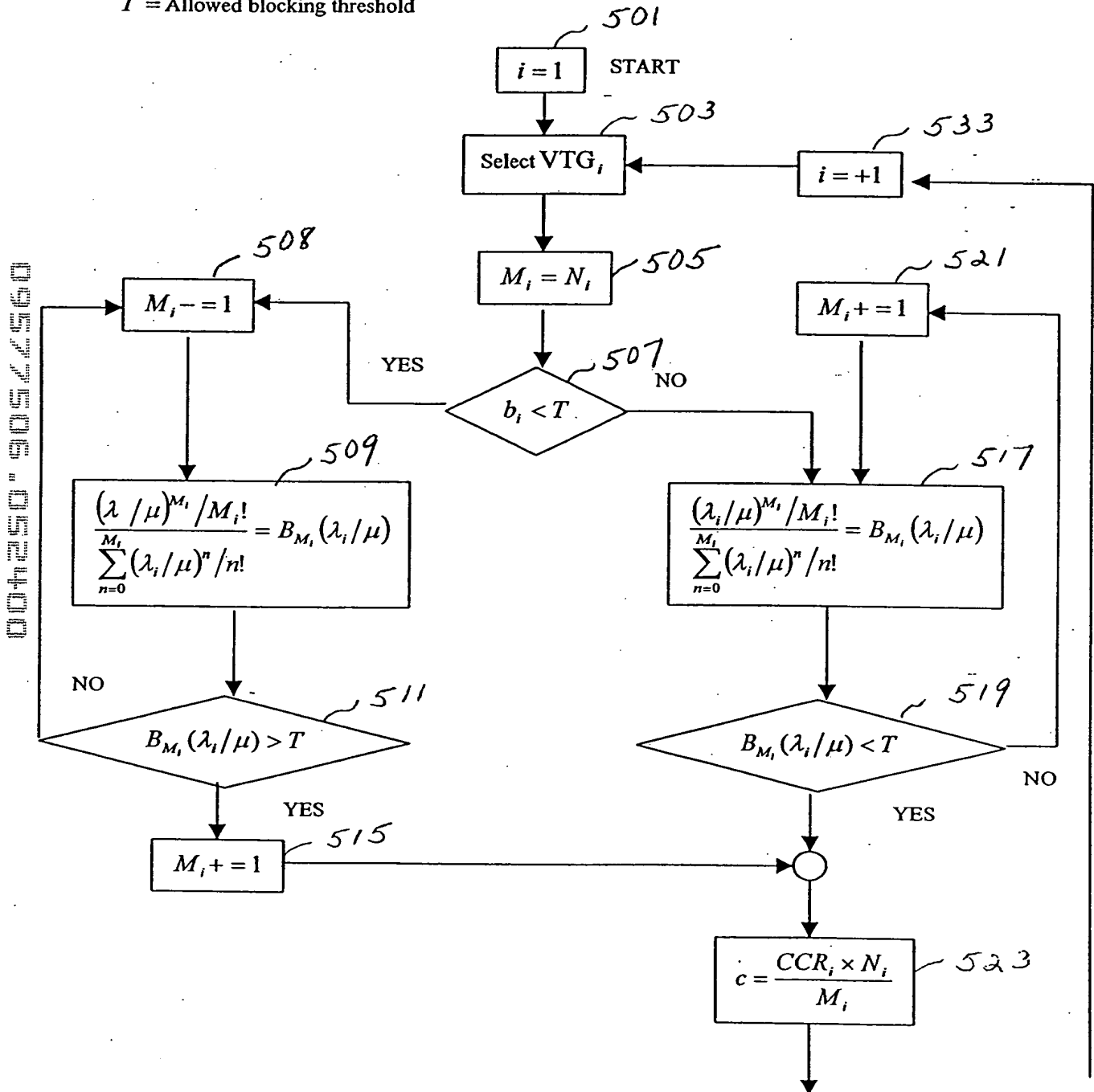


FIG. 5A

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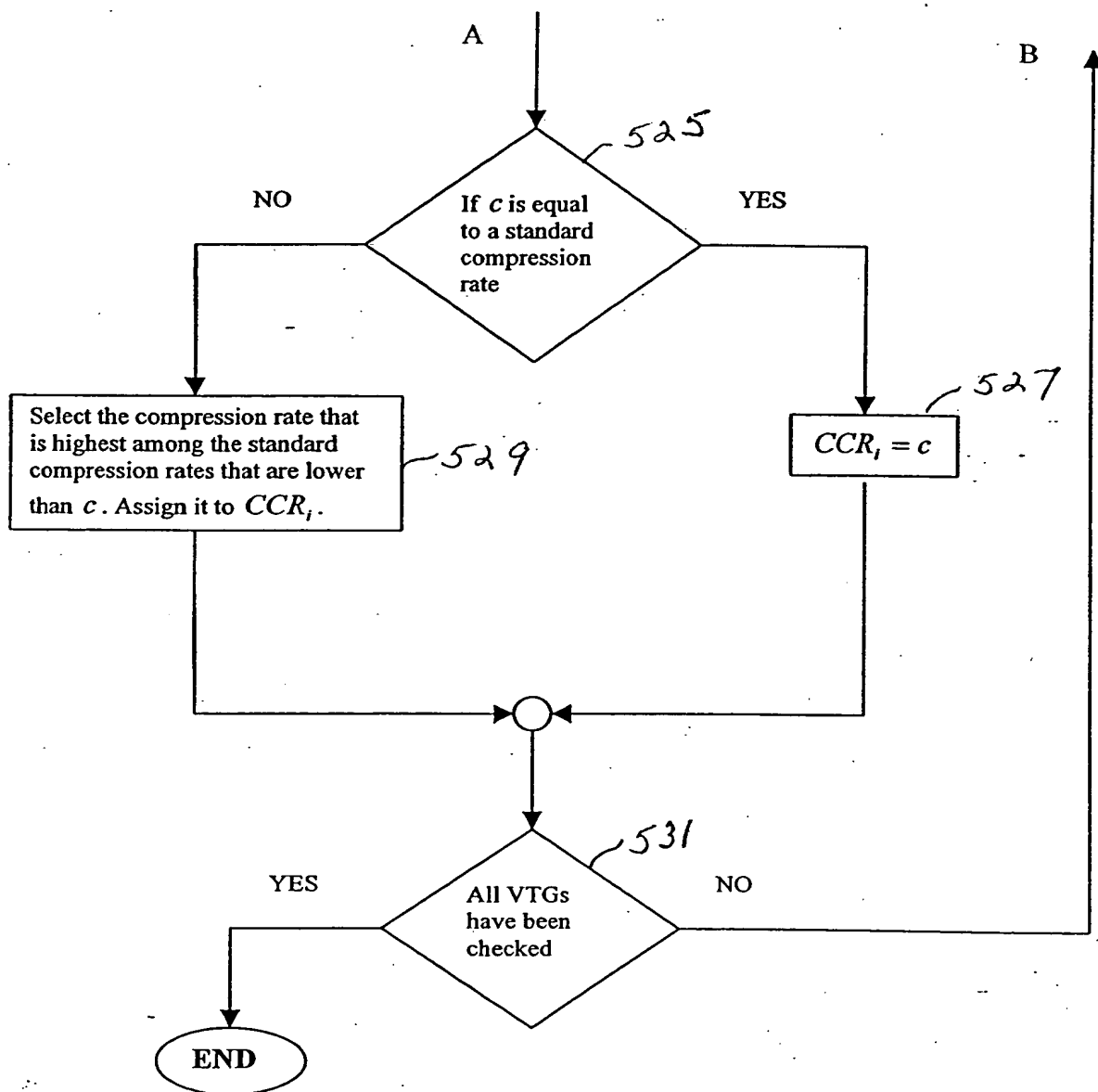


FIG. 5B

Call Blocking (unavailability of RTP measurements)

PU_i = utilization of i^{th} port

PC_i = capacity of i^{th} port

U_i = utilization threshold

λ_k = call arrival rate for k^{th} PVG pair

N_k = number of calls for which bandwidth is allocated to k^{th} PVG pair

p_{B_i} = bandwidth reduction correction factor due to the i^{th} port

p_{G_i} = bandwidth incremental correction factor due to the i^{th} port

f_k = bandwidth reduction correction factor assigned to the k^{th} PVG pair

e_k = bandwidth incremental correction factor assigned to the k^{th} PVG pair

B_k = assigned blocking probability to the k^{th} PVG pair

$(1/\mu)$ = average call holding time

T = blocking threshold

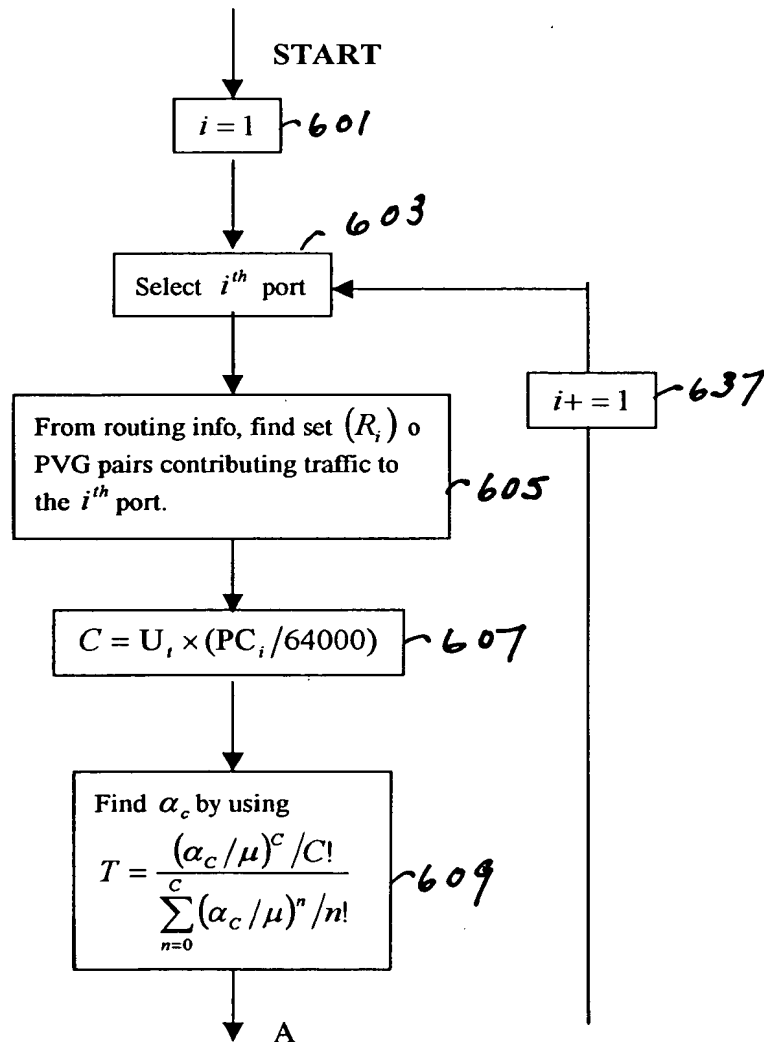


FIG 6 A

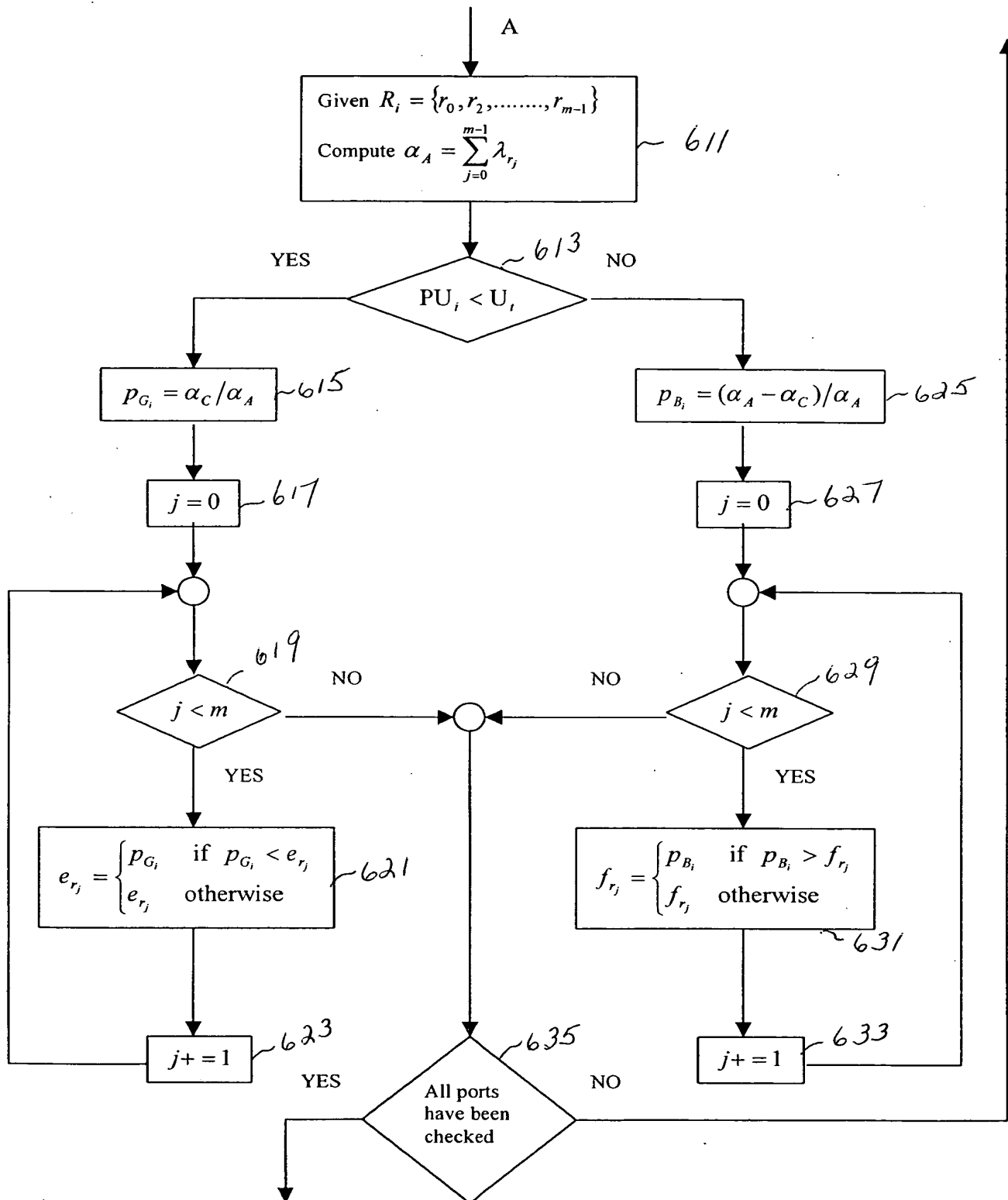


FIG. 6B

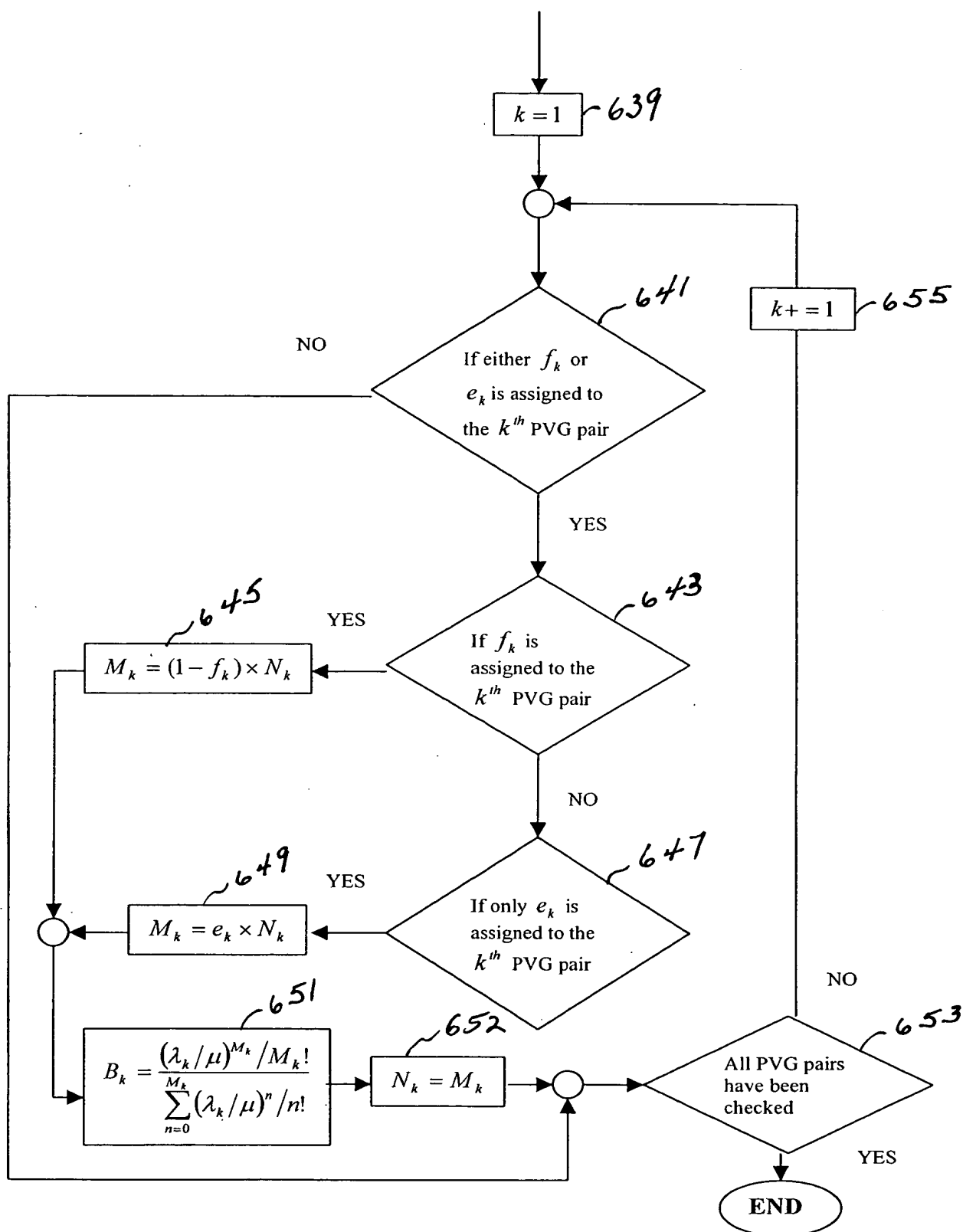


FIG. 6C

Call Blocking (Availability of RTP measurements)

L_c = fraction of packet loss per call

L_t = packet loss threshold

D_c = delay jitter per call

D_t = delay jitter threshold

N_i = number of active calls in i^{th} PVG pair

$PVGPAIR_i = i^{th}$ PVG pair

S = set of PVG pairs between which poor performing calls exist

P = set of all PVG pairs

F_i = indicator flag for $PVGPAIR_i$

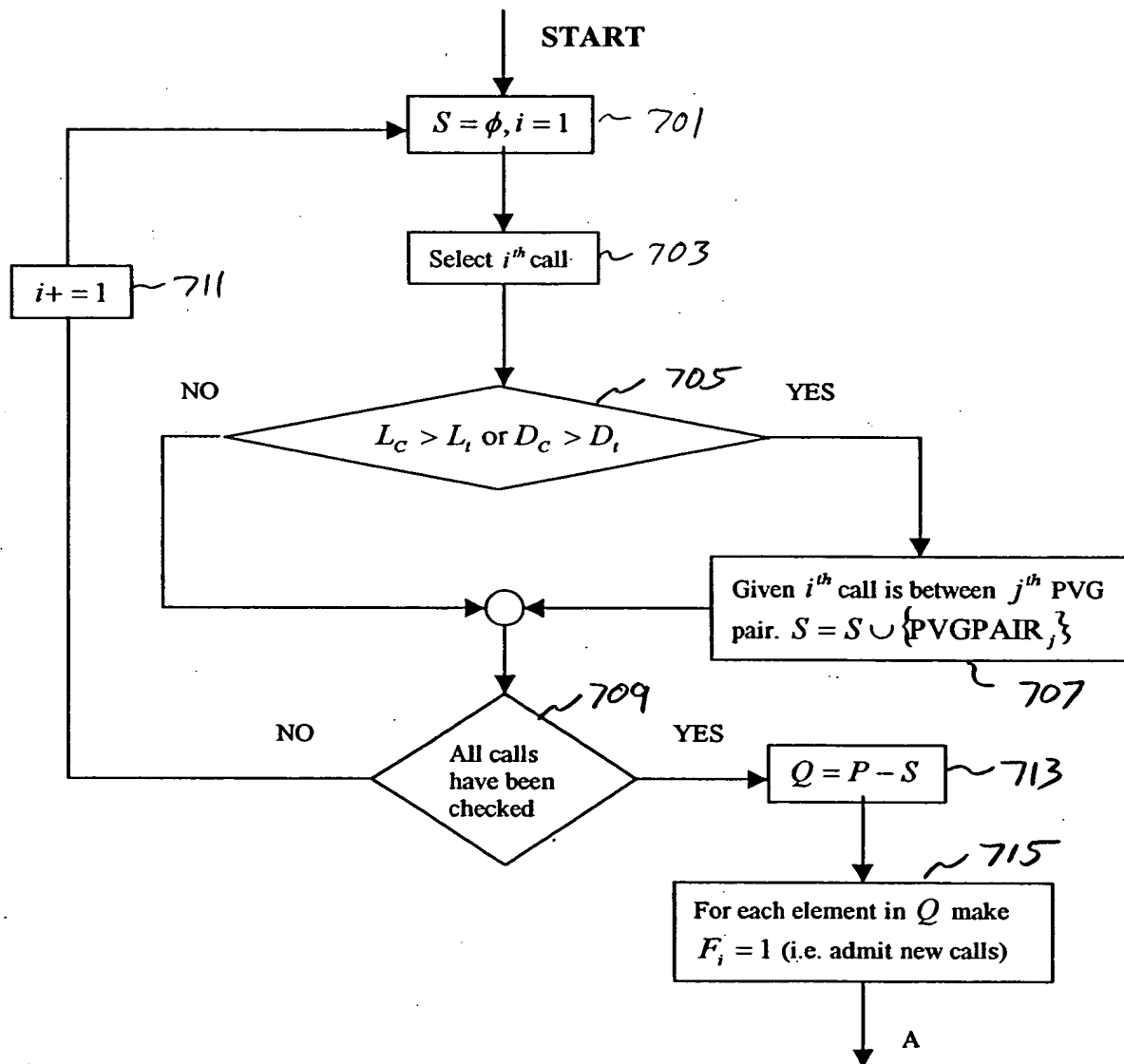


Fig. 7A

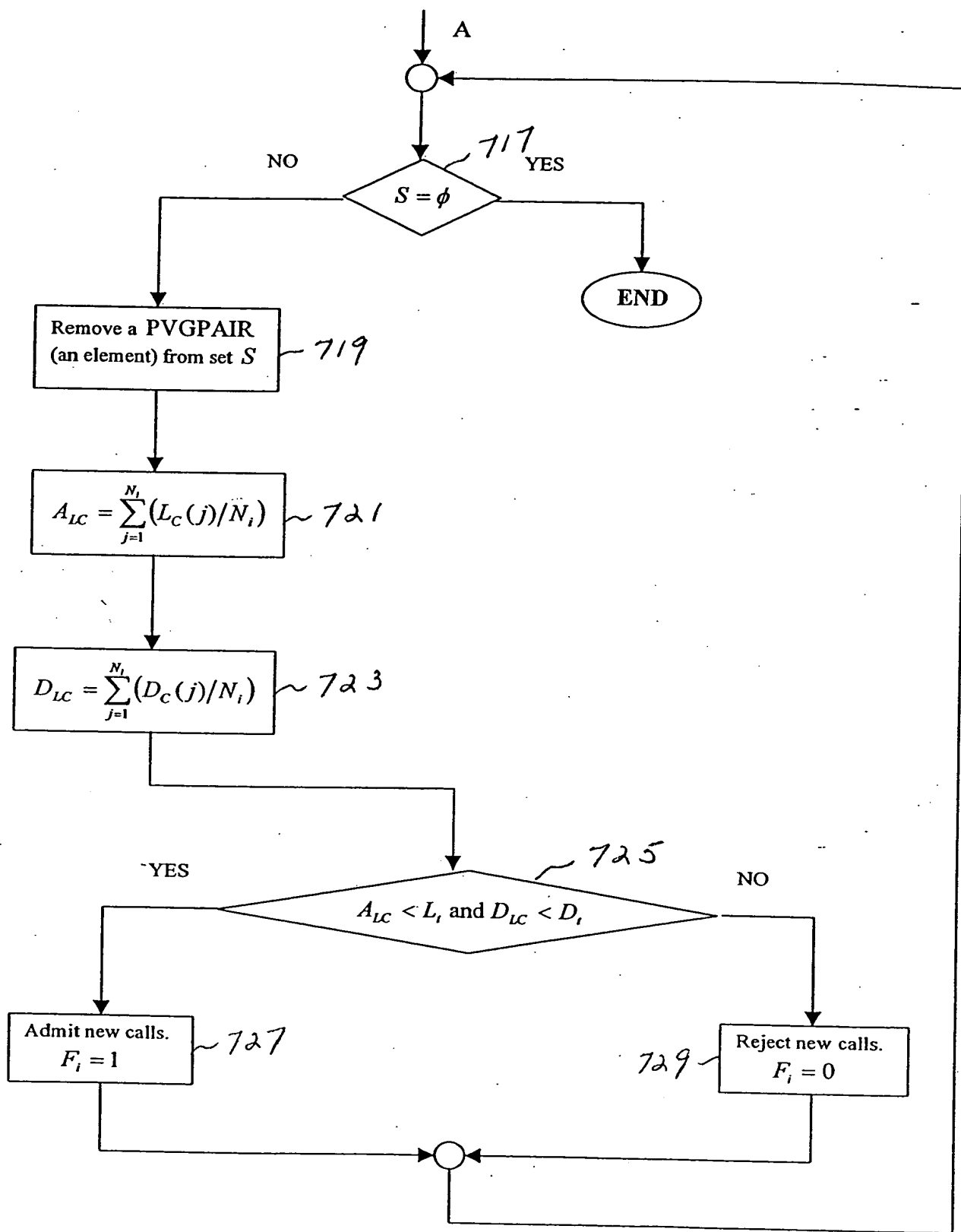


FIG. 7B

Re-routing/Call Gapping (Availability/unavailability of RTP measurements)

PU_i = utilization of i^{th} port

PC_i = capacity of i^{th} port

U_t = utilization threshold

λ_k = call arrival rate for k^{th} PVG pair

N_k = number of calls for which bandwidth is allocated to k^{th} PVG pair

$(1/\mu)$ = average call holding time

p_{B_i} = bandwidth correction factor due to i^{th} port

f_k = bandwidth correction factor assigned to the k^{th} PVG pair

T = blocking threshold

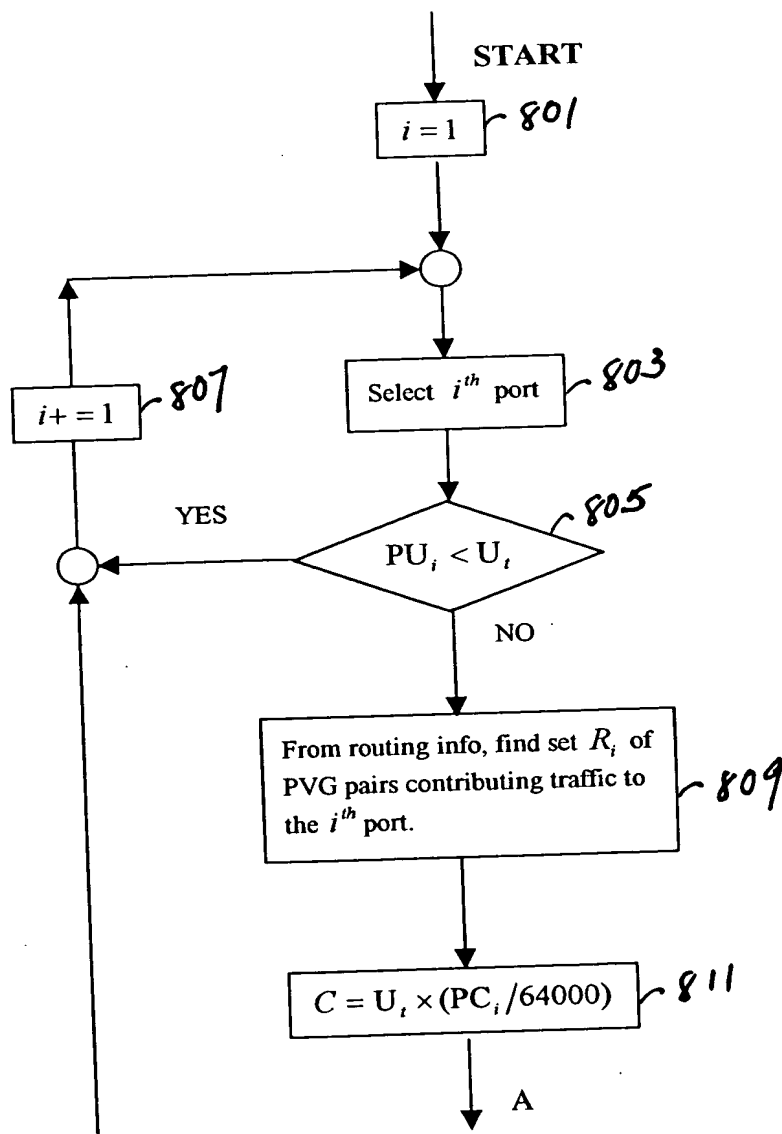


FIG. 8A

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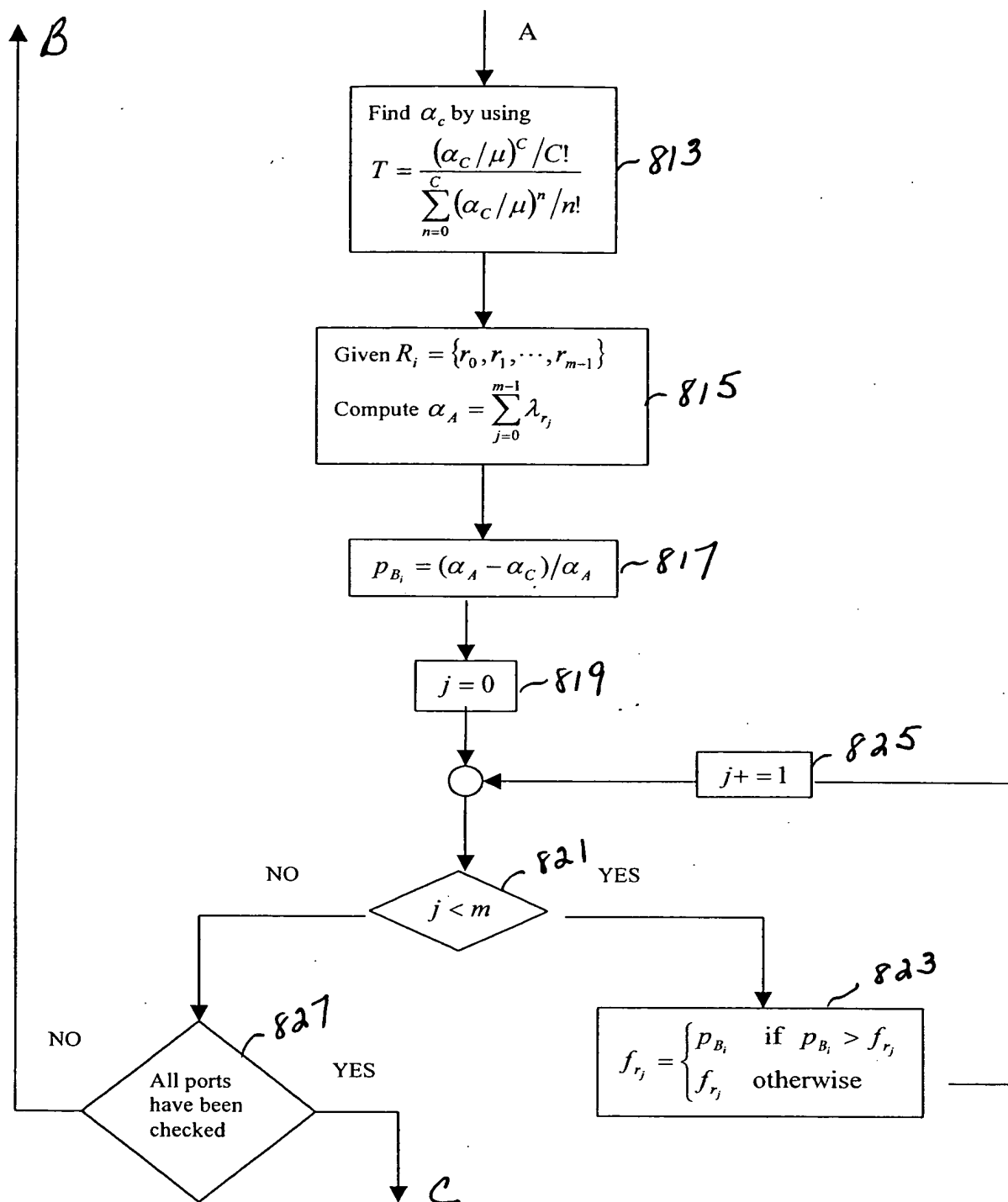


FIG. 8B

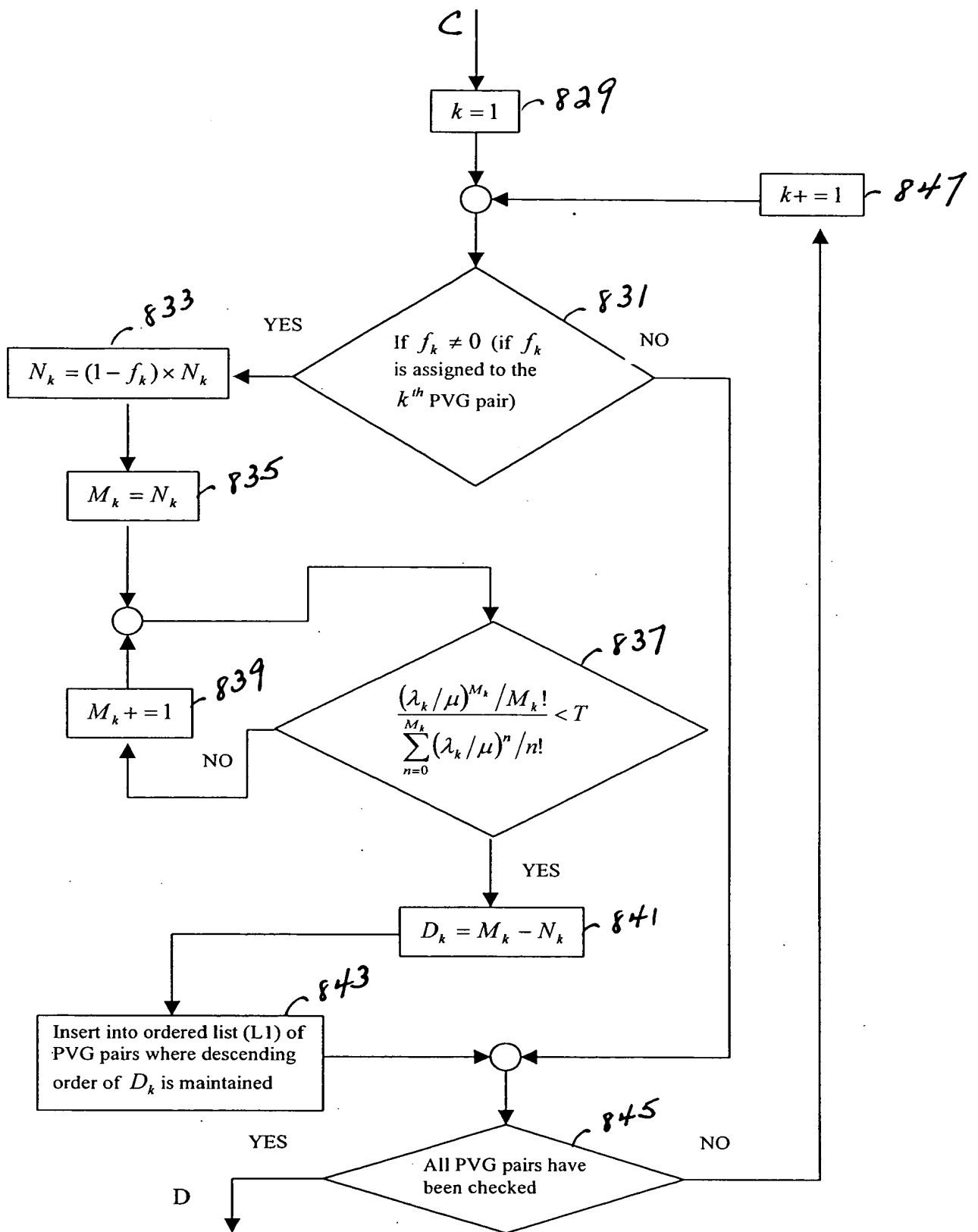


FIG. 8C

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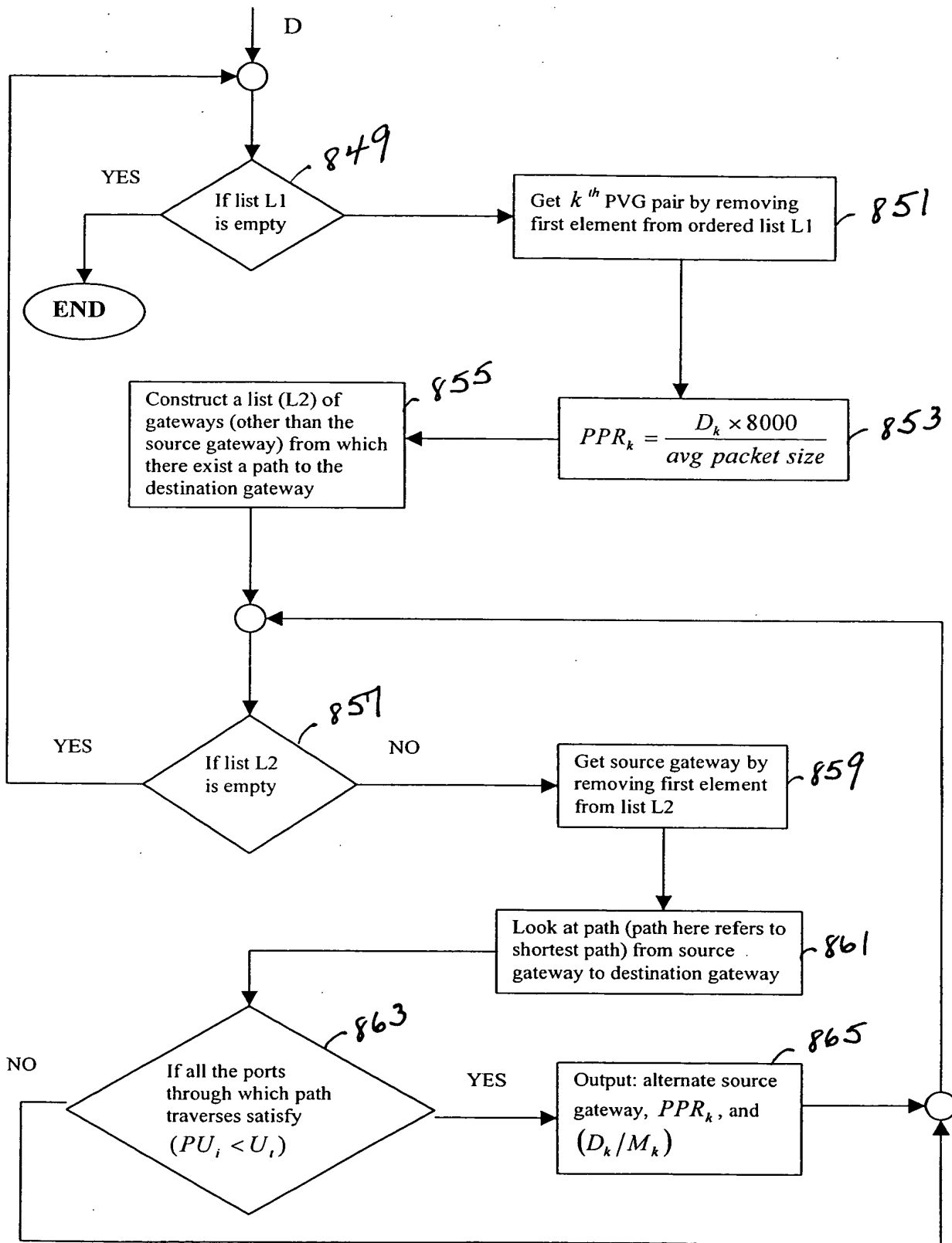


FIG. 8D

Compression (Availability/unavailability of RTP measurements)

U_i = utilization of i^{th} port

PC_i = capacity of i^{th} port

U_t = utilization threshold

λ_k = call arrival rate for k^{th} PVG pair

N_k = number of calls for which bandwidth is allocated to k^{th} PVG pair

CCR_k = current compression rate allocated to k^{th} PVG pair

p_{B_i} = bandwidth reduction factor due to the i^{th} port

p_{G_i} = bandwidth incremental factor due to the i^{th} port

f_k = bandwidth reduction correction factor assigned to the k^{th} PVG pair

e_k = bandwidth incremental correction factor assigned to the k^{th} PVG pair

$(1/\mu)$ = average call holding time

T = blocking threshold

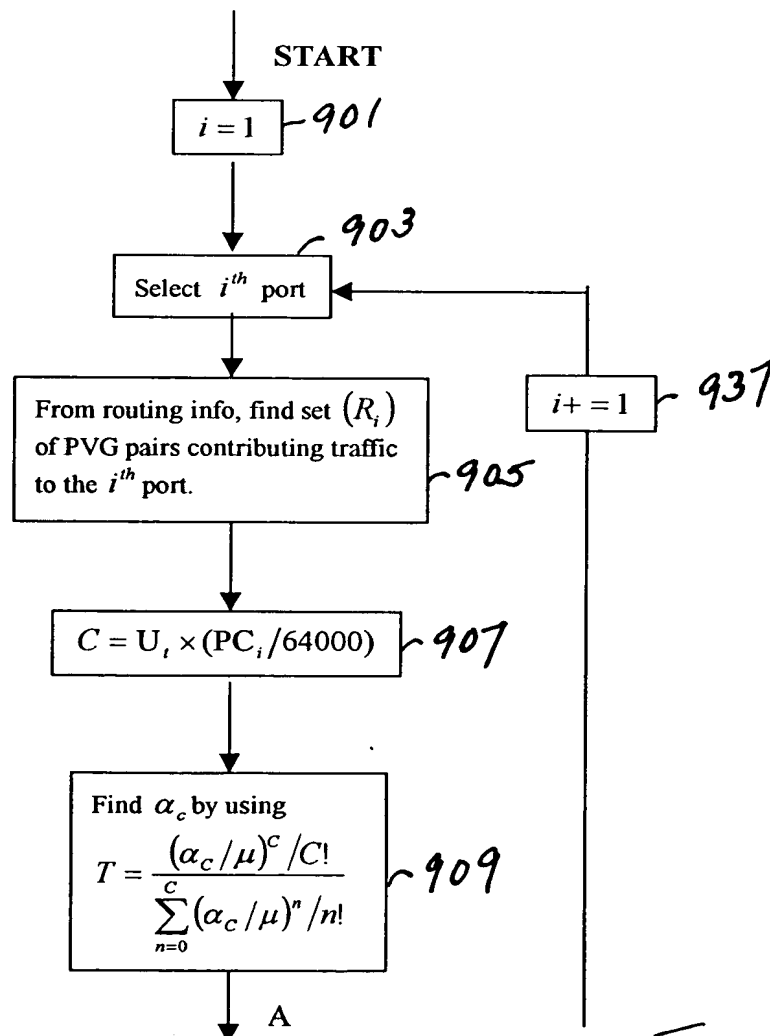


FIG. 9A

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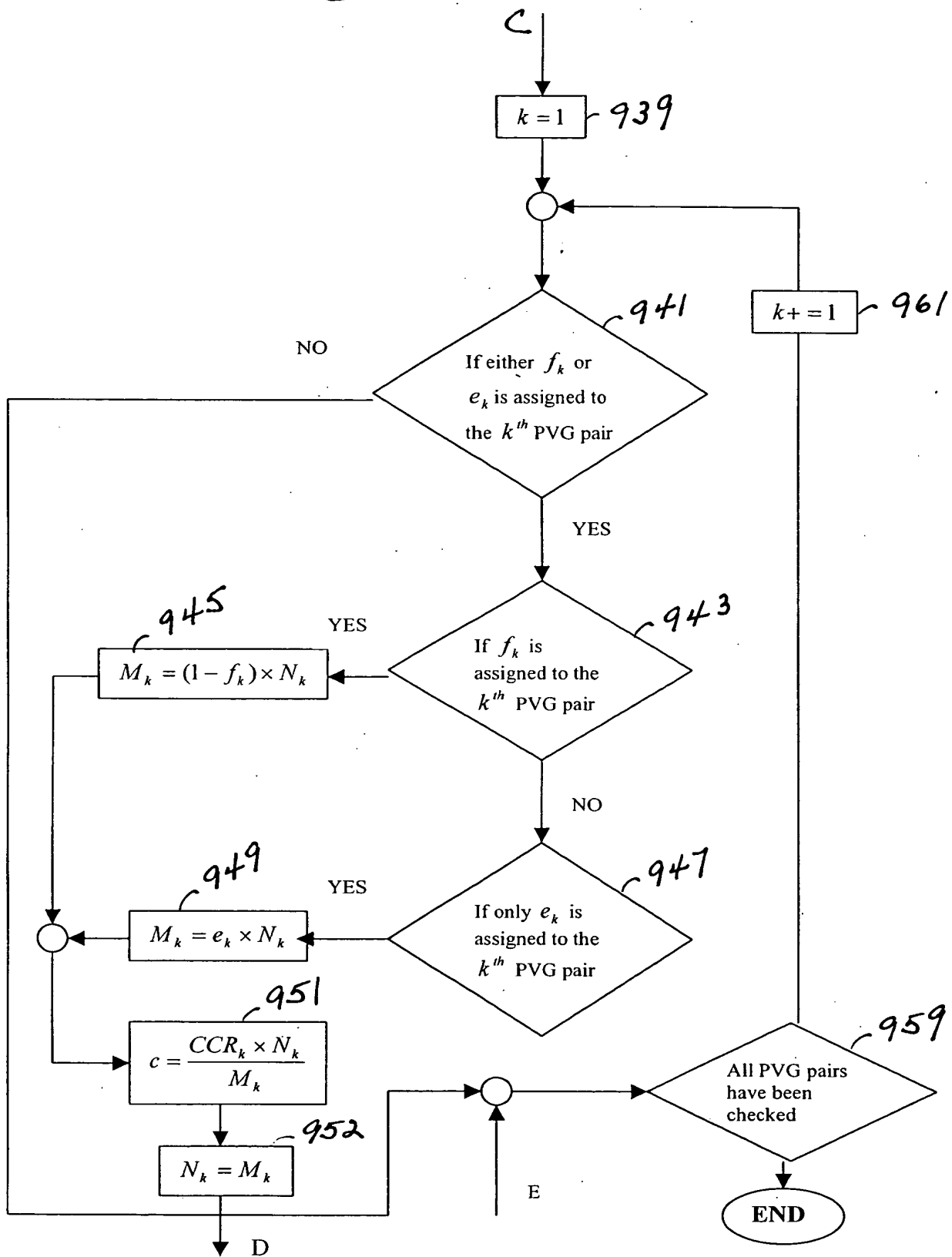


FIG. 9C

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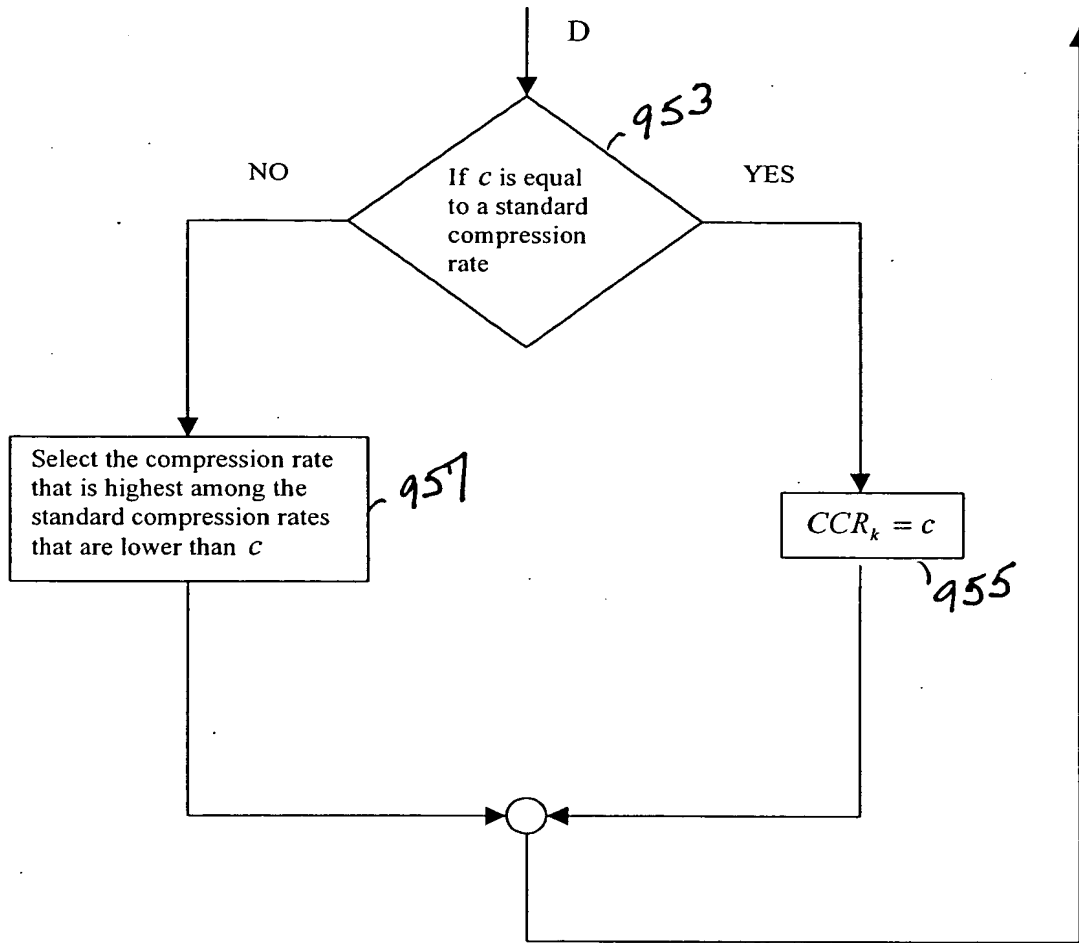


FIG. 9D